2024 DINA UPDATE FOR LATIN AMERICA

IGNACIO FLORES
ÁLVARO ZUÑIGA-CORDERO

WORLD
INEQUALITY
LAB

Income Inequality Series for Latin America[*]
Technical Note

Ignacio Flores[1,2] Álvaro Zúñiga-Cordero[1]

ignacio.flores@psemail.eu a.zuniga-cordero@psemail.eu

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Update

[†][1]Paris School of Economics, 48 Boulevard Jourdan, 75014 Paris, France.
[2]City University of New York, 365 5th Avenue, New York, United States

1 Introduction

This technical note outlines the modifications made to the Latin American and Caribbean income inequality series as part of the October 2024 update in the World Inequality Database. The document provides an overview of the new data sources incorporated into the database, including updating data for countries already present in previous versions. The most significant changes introduced in this update fall into two main categories. First, there has been an extension of the pre-tax national income series, which now includes administrative data until 2022 for Brazil and up to 2021 for Chile and Colombia. Second, the post-tax national income series, initially introduced two years ago, has also been extended. This update is particularly valuable as it enables, for the first time, an analysis of the COVID-19 pandemic's impact on inequality in Latin America. This analysis utilises household surveys and administrative data for 2020, 2021, and 2022, specifically for Brazil. The quality of the estimates has also improved compared to last year, as more robust administrative data is now available for Brazil, Chile, and Colombia. New surveys and national accounts data have also been incorporated for most countries in the region.

Our updated post-tax national income estimates reveal lower income concentration levels than the pre-tax data. In several cases, we observe a more rapid decline in inequality, primarily driven by increased public spending on in-kind transfers, particularly in health and education. This acceleration in reducing inequality highlights the role of social policies and government intervention in mitigating income disparities. Including new data and correcting errors in the pre-tax series have resulted in only marginal changes to both the trends and levels of inequality compared to previous updates. These adjustments, while minor, ensure a more accurate representation of the income distribution patterns across the region, and they are consistent with findings from prior reports (see De Rosa et al. (2022b) DFM and Flores and Zúñiga-Cordero (2023)).

This update introduces several significant data innovations. One key change involves Ecuador, which has begun reporting Operating Surplus and Mixed Income separately since 2018, whereas these components were previously combined. This adjustment affects the scaling factor step, accounting for most of the differences observed in the updated series for Ecuador. Brazil, Colombia, and Chile have added two additional years of tax data, with Colombia also updating its administrative tax declarations for previous years. Colombia now uses a more comprehensive measure of total income as a reference, which has resulted in larger adjustments when incorporating the new tax data, ultimately leading to an increase in measured inequality.

Chile introduced further modifications to its survey weights, linked to updates following the 2017 Census. While similar adjustments were made in previous years, this year's changes also affect earlier periods, explaining many of the observed discrepancies in the data. Furthermore, Uruguay has added substantial data to its national accounts. Whereas previously only data for 2012 and 2016 were available, the country now reports information annually from 2016 through 2019. Finally, government spending data has been updated for most countries, drawing on the work of Gethin (2023a, 2023b), which improves the post-tax estimates in most countries.

In conclusion, while this technical note provides an overview of the most recent updates to our inequality series for Central and South America, it is intended to summarise the key findings. A comprehensive scientific evaluation of the results, along with a detailed explanation of the data sources and methods used, as well as a discussion on how these findings contribute to the existing literature, can be found in (Alvaredo et al., 2022) and (De Rosa et al., 2022b). The remainder of this technical note is organised as follows: Section 2 offers a detailed account of the new data sources, methodological improvements, and the resulting changes in levels and trends within the updated pre-tax series. Section 3 focuses on the revised national post-tax estimates.

2 Updated pre-tax series

2.1 New data sources

New data sources introduced in this update are summarised in Table 1, highlighting changes compared to the 2023 version. All countries, except Colombia, updated household survey data from 2021 to 2022. This slight delay might come from the homogenisation process performed for all surveys at ECLAC and not from the Colombian Statistical Institute (DANE), which produces household surveys (GEIH) annually. Hence, for Colombia, we continue to use 2021 as its most recent year for household surveys, though we have updated its national accounts to include data for 2022. New administrative data for Brazil, Chile, and Colombia up to 2021 have enhanced the accuracy of estimates, particularly given the importance of this period in understanding the effects of the COVID-19 pandemic on income inequality.

In the case of Chile, the full potential of this new administrative data could not be realised. Due to Chile's biennial household survey, no direct match is available between the 2021 administrative data and household surveys. Uruguay has also significantly

contributed to the dataset by adding new national accounts (SNA) data. Previously, only data for 2012 and 2016 were available, but Uruguay now reports data annually from 2016 through 2019. Most countries in the region will generally have SNA data up to 2022, except for Brazil and Costa Rica, where the data is current up to 2021, and Uruguay, as noted. Finally, for other countries that do not report such data, the adjustment of top incomes is based on earlier years when tax data was available.[1]

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[1]The imputation of missing years remains as in last year's update, following the general rule in the database. See Chancel and Piketty (2020)

Table 1. New data sources used for pre-tax income series

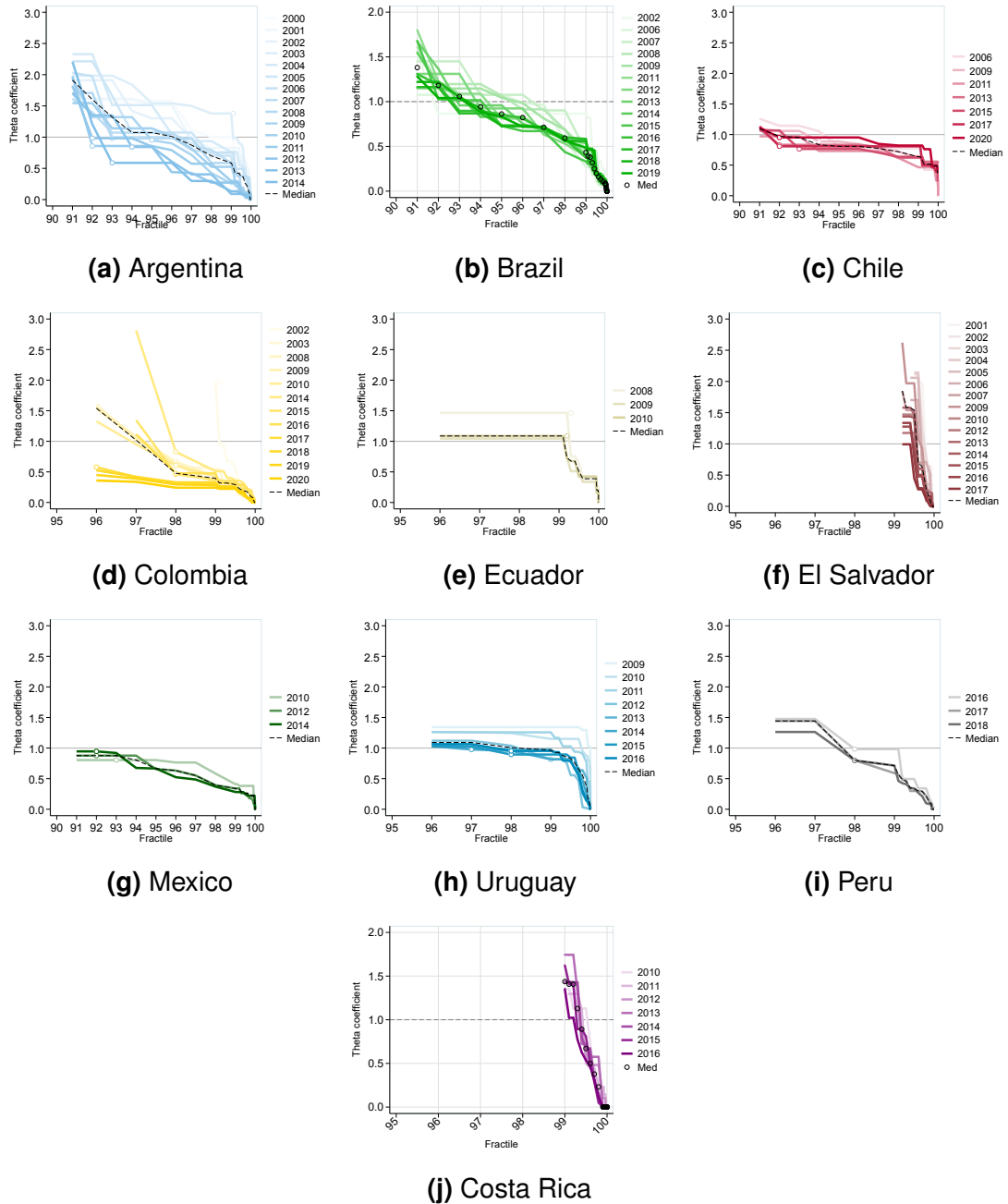| Region	Country	Last year available before the update	New data bases		
			Detailed national accounts	Survey data	Administrative data
Latin America	Argentina	2021	-	2022	-
Latin America	Brazil	2021	2021	2022	2021-2022
Latin America	Chile	2020	2022	2022	2021
Latin America	Colombia	2021	2022	2021	2021
Latin America	Ecuador	2021	2022	2022	-
Latin America	Peru	2021	2022	2022	-
Latin America	Uruguay	2021	2017-2019	2022	-
Central America and the Caribbean	Costa Rica	2021	2021	2022	-
Central America and the Caribbean	Dominican Republic			2022	-
Central America and the Caribbean	El Salvador	2021	-	2022	-
Central America and the Caribbean	Mexico	2020	2022		-

Source: Own elaboration.

Figure 1: New data sources used for pre-tax income series.

2.2   Methodological improvements

One of the vital data innovations introduced in this update concerns Ecuador, where the inclusion of Operating Surplus and Mixed Income, reported separately since 2018, has led to significant adjustments in the scaling factor step. This change accounts for most of the observed differences in the data series for Ecuador. Colombia has also made notable updates, particularly in the administrative tax declarations reported for previous years. With a more comprehensive measure of total income now serving as a reference, the adjustments resulting from including new tax data are more significant and have increased inequality. In Chile, further adjustments were made to survey weights this year following updates linked to the 2017 Census. While similar adjustments were made in the previous year, this time, they also affect data of earlier years, which explains many of the differences seen in the current dataset.

Figure 2: Theta coefficients, by country and year

(a) Argentina

(b) Brazil

(c) Chile

(d) Colombia

(e) Ecuador

(f) El Salvador

(g) Mexico

(h) Uruguay

(i) Peru

(j) Costa Rica

Note. Authors' elaboration based on Blanchet et al. (2022)

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2.3 Changes in levels and trends

The results for 2021 are presented in Figure 3, which compares the updated series (represented by red lines) for both the top 10 per cent and bottom 50 per cent income shares. With the availability of new data, many of the observations from the previous update have been confirmed. Specifically, most countries show a decrease in the share of the bottom 50 per cent in 2020, followed by an increase in 2021. Similarly, a rise in the share of the top 10 per cent is evident between 2020 and 2021 for most countries, although this is not the case for all. The 2024 update has led to some changes in the estimates for Brazil. While previous estimates suggested two consecutive drops in the top 10 per cent share during 2020 and 2021, the new data indicates that the share of the top 10 per cent first increased and then decreased. This suggests greater stability in the income share of Brazil's top 10 per cent over the past two years than was previously estimated. In contrast, the new data has deepened the results for Costa Rica, the Dominican Republic, and Mexico, where the drop in the top 10 per cent share is now more pronounced than in earlier estimates.

We observe similar trends in the income share of the top 1 per cent, as shown in Figure X in the Appendix. For most countries, the new estimates align with the levels and trends from the previous update. However, improvements in precision have been made for Chile, Colombia, Ecuador, and Peru. In the cases of Chile and Colombia, these improvements are mainly due to the increased availability of administrative data, which not only enhances the precision of the estimates but also allows for updates to the theta coefficients for the entire series. Uruguay stands out in this update, as including new, detailed National Accounts data for 2017 to 2019 has contributed to more comprehensive estimates. Regarding the income share of the bottom 50 per cent, there has been a notable increase in Argentina, Chile, Costa Rica, and Mexico. Additionally, Ecuador, Peru, El Salvador, and Uruguay have shown more moderate increases in the share held by the bottom 50 per cent. These changes provide valuable insights into the evolving income distribution in these countries.

As highlighted in the previous update, the observed drop, followed by an increase in distributional measures for 2020 and 2021, may reflect the distributional effects of the COVID-19 pandemic. This update marks the first instance where System of National Accounts (SNA) data is available for all countries through at least 2021, supplemented by survey and administrative data when available. Notably, the adjustments in income shares are more pronounced for the top 10 per cent than for the bottom 50 per cent. This discrepancy is linked to the superior quality of administrative data available for the higher end of the income distribution. In contrast, estimates for the bottom 50 per cent

rely more heavily on household surveys, even though they are rescaled using the BFM method (see (Blanchet et al., 2022)), which may limit the precision of these estimates compared to those for higher-income groups.

Figure 3: Pre-tax national income: new vs. old series.
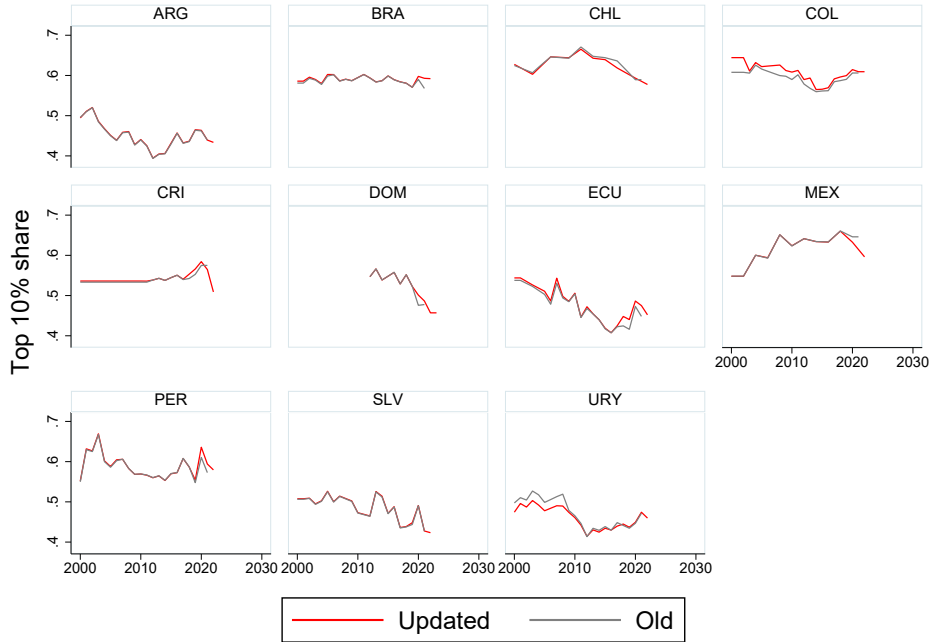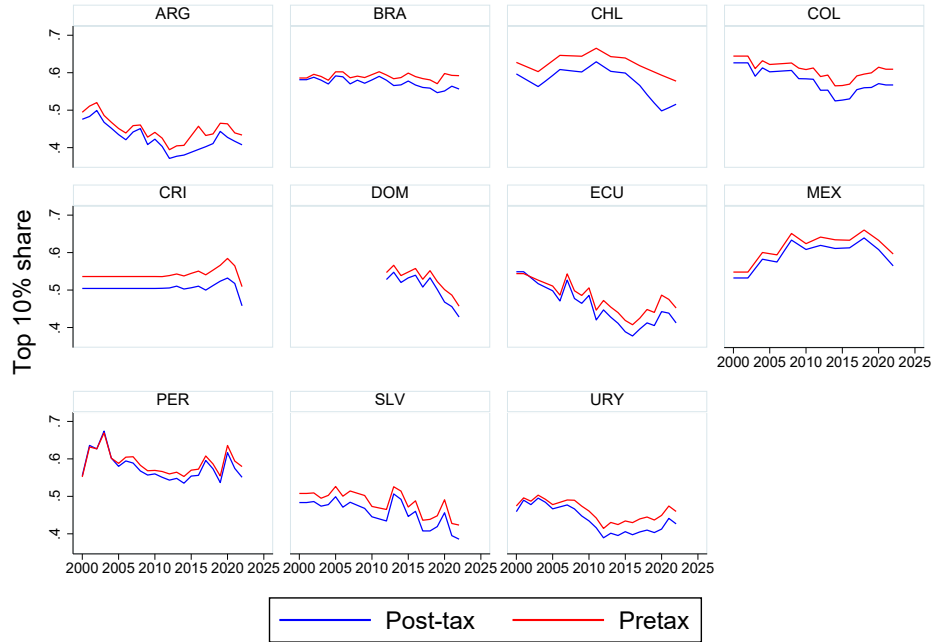

(a) Top 10 % share.
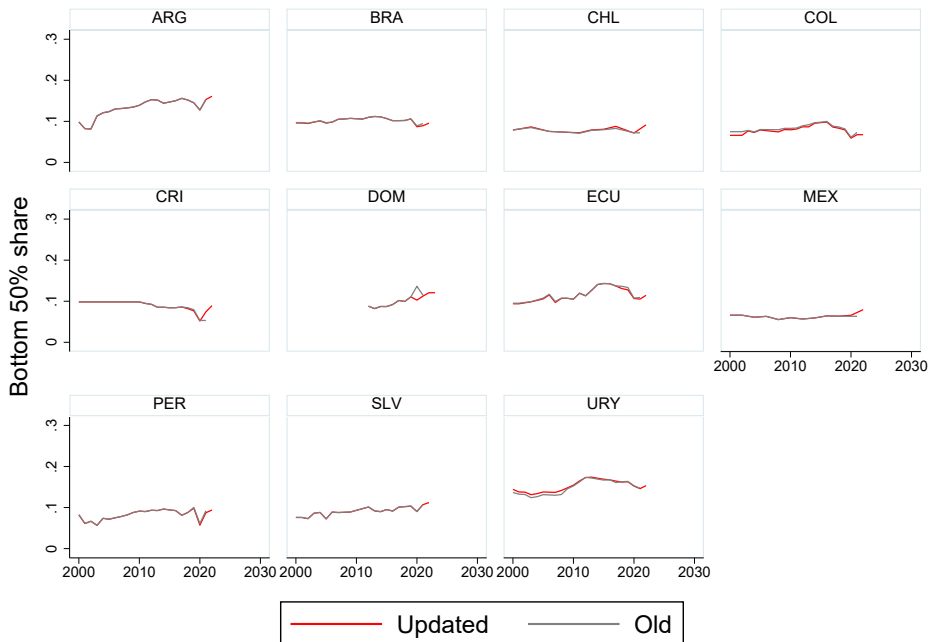
(b) Bottom 50 % share.

3 National post-tax income series

Since our previous updates in 2022 and 2023, we have been estimating national post-tax income series for Latin America (see De Rosa et al. (2022a) and Flores and Zúñiga-Cordero (2023)). In this section, we largely adhere to the methodology outlined in the Distributional National Accounts (DINA) guidelines (WIL, 2021) and in De Rosa et al. (2022b). These estimates have also benefited from updated tax data from the OECD, the Inter-American Centre of Tax Administrations (CIAT) and ECLAC, which now includes data until 2022. Our analysis reveals that in-kind public transfers play the most significant role in regional redistribution. In contrast, through taxes and direct transfers, monetary redistribution tends to be either neutral or, in some cases, regressive (see effective tax rates in De Rosa et al. (2022b)). When comparing pre-tax to post-tax national incomes, the critical factor driving redistribution is in-kind public spending, which has seen substantial growth in recent decades. Figure 4 illustrates that in countries with more developed tax systems, such as Chile and Uruguay, not only is the level of inequality—measured by the share of income held by the top 10 per cent—lower in the post-tax series, but the trend over time also shows a reduction in inequality. This pattern is even more pronounced in the bottom 50 per cent share, where the decreasing trend suggests that post-tax redistribution is more effectively targeted at lower-income households than at the top of the distribution.

In Figure 4, we observe several notable changes when comparing the post-tax series to the pre-tax estimates presented earlier. First, in all countries, the share of income held by the top 10 per cent is consistently lower in the post-tax series, while the share of the bottom 50 per cent is higher. This outcome is a direct result of the redistribution of income components along the distribution in the construction of the post-tax series. While both the pre-tax and post-tax series generally follow similar trends, there are significant differences in some instances. For example, in Chile, the post-tax trend for the top 10 per cent share continues to decrease but shows a sharper drop in 2021, followed by a slight increase in 2022. In contrast, the pre-tax series shows a different pattern for the bottom 50 per cent, with a sharp decline in 2021 followed by a rise in 2022, whereas the post-tax series for this group demonstrates a steady, almost linear increase. Additionally, we observe that most countries' differences in income share levels between the pre-tax and post-tax series become more pronounced in later years. This divergence is likely attributable to the higher quality of administrative data available for more recent periods, enhancing the precision of post-tax estimates.

Figure 4: Post-tax national income: new vs. old series.

(a) Top 10 % share.

(b) Bottom 50 % share.

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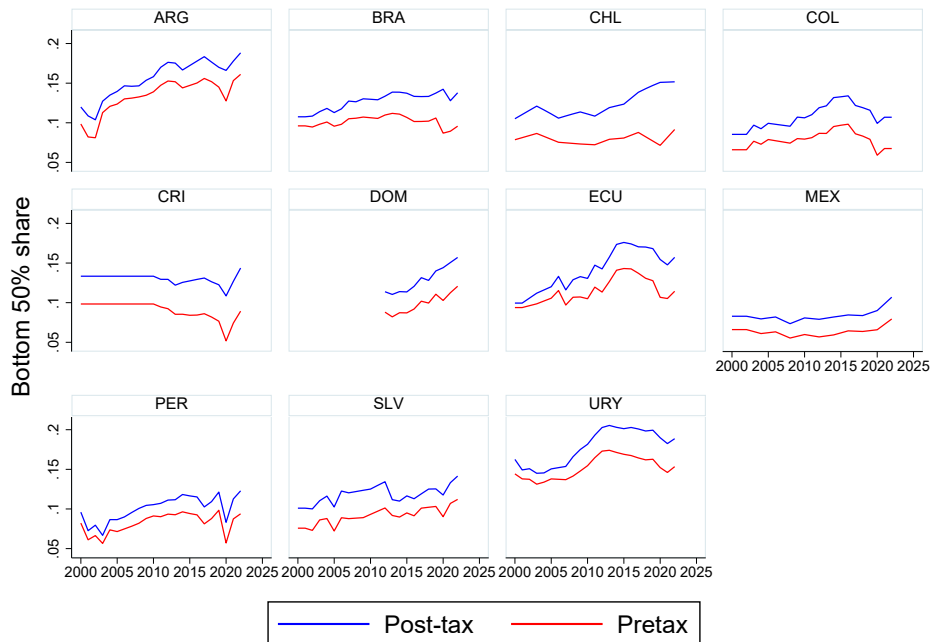
3.1 Methodological improvements

For most countries, government spending estimates have been updated based on the work of Gethin (2023a, 2023b). Including these estimates represents a notable improvement, as they provide detailed methods for distributing macroeconomic aggregates of spending on health and education across the income distribution. Gethin's methodology for education is based on a unique micro database covering over 145 countries between 1980 and 2021, representing about 94 per cent of the global population. The approach involves calculating per-pupil expenditure at the primary, secondary, and tertiary levels and allocating these expenditures to children attending school within households. The distribution of education spending is shaped by three main factors: inequalities in access to education, disparities in spending across educational levels, and the demographic composition of households.

In the case of healthcare, public healthcare spending is distributed according to the intensity of use, measured by the frequency of visits to healthcare providers. This methodology draws from four primary sources: the Commitment to Equity (CEQ) database, 36 national surveys, the World Health Survey, and estimates fromPiketty et al. (2018) for the United States. Together, these data sources cover 109 countries, representing 86 per cent of the global population. The progressivity of healthcare transfers is determined by inequalities in access to healthcare and the varying healthcare needs of low- and high-income households. Both education and healthcare data are valued at their cost of provision to ensure consistency with national account measures. However, challenges still need to be addressed in capturing the quality and efficiency of these public services.

The final data series for in-kind education and health transfers reflects these services' monetary value and distributional impact across different income groups. The data show that education transfers are more progressive for households with more children in school, while inequalities in access to higher levels of education persist. For healthcare, the data indicate that low-income households receive more in-kind transfers due to their more significant healthcare needs, although barriers to access may still exist. After processing, the data take the form of progressive transfers, highlighting the redistributive impact of public spending on these essential services.

3.2 Changes to the post-tax series in the previous update:

The differences between the old and updated post-tax series primarily stem from improvements in the redistribution of public goods, which is more accurately captured in this update by including new data sources, as detailed in Section 3.1. In aggregate terms, the most significant differences are observed in Colombia, Ecuador, and Uruguay, both in the income share of the bottom 50% and the top 10%. These differences are illustrated in the post-tax national income graphs found in the Appendix, particularly in Figure A.2. One key innovation in this update is the presentation of public goods expenditure as a share of GDP, broken down into three categories: health, education, and other social expenses. Figures 5a and 5b compare the new and previous estimates. Interestingly, the adjustments are not uniform across all cases.

3.2.1 Health:

Brazil and Costa Rica exhibit a significantly higher share of health expenditures as a percentage of GDP in the new series (orange) compared to the old series (green). This difference is primarily due to the availability of more detailed data, enabling better redistribution of health expenditures along the income distribution. For most countries, the estimated share for the last three years is also higher in the new series, including Colombia, the Dominican Republic, Ecuador, El Salvador, and Mexico. In contrast, some countries, such as Peru and Uruguay, present systematically lower estimates in the new series than the old ones. Despite these variations in levels between countries, it is essential to note a common trend: most countries spent a higher share of GDP on health in 2020, 2021, and 2022. This increase is likely related to the impact of the COVID-19 pandemic, which prompted increased spending on sanitary measures and vaccine procurement.
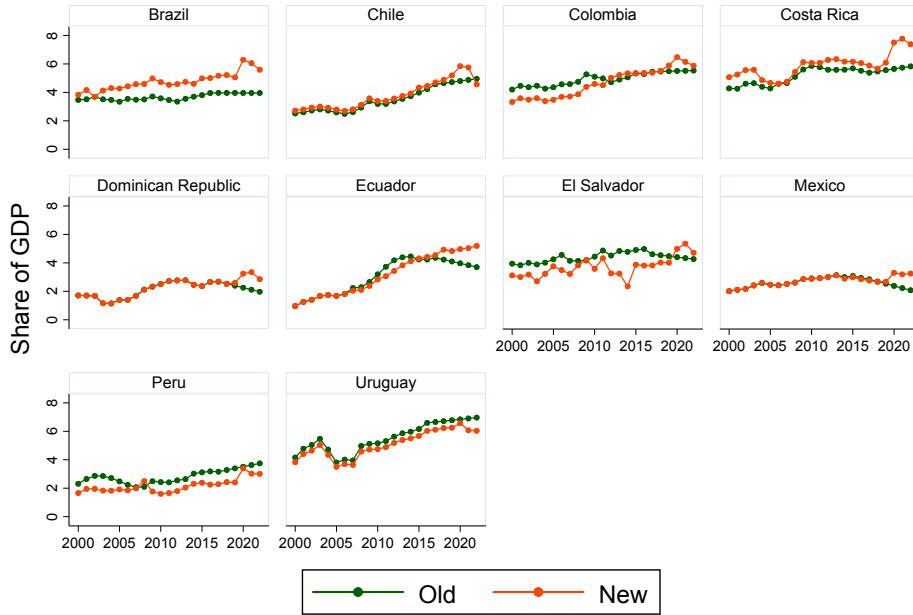
3.2.2 Education:

In the case of education, specific countries, such as Brazil, Chile, Colombia, and Uruguay, display a systematically lower share of education expenditures as a percentage of GDP in the new estimates compared to previous ones. On the other hand, countries like Costa Rica, the Dominican Republic, and Ecuador show consistently higher shares in the updated estimates. A more significant divergence between the old and new estimates appears in recent years, reflecting the greater availability of information for this period. Although both the method used at the WIL, see WIL (2021) and the

approach in Gethin (2023a, 2023b) employ aggregated amounts from national accounts as benchmarks, there are at least two factors that could explain the differences between the old and new estimates. First, many countries have new vintages of their national accounts, such as Uruguay, which has updated them for several years, improving the accuracy of estimates. Second, there may be differences in the use of national accounts related to education and health expenditures, particularly those borne by households.
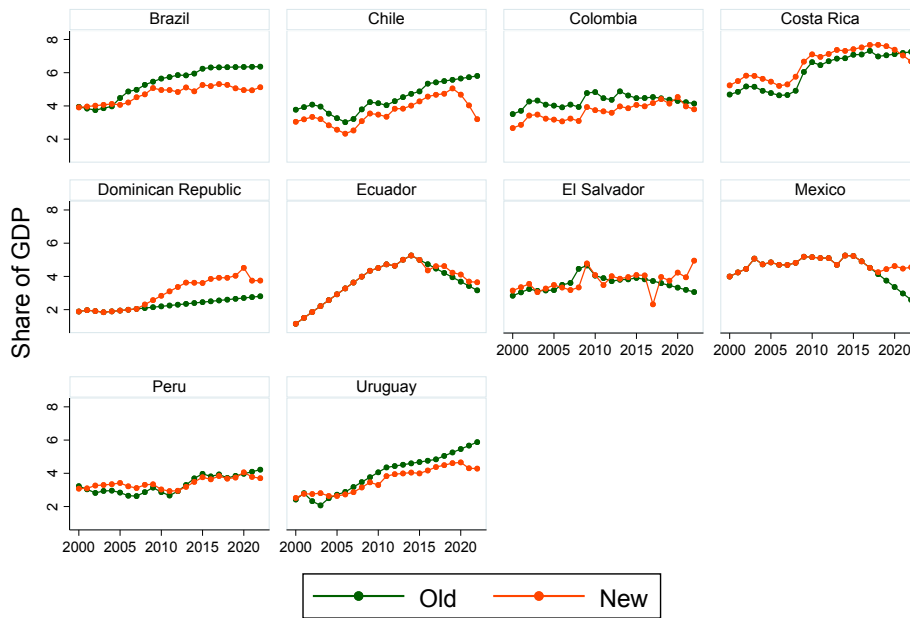
3.2.3 Other Social Expenses:

Finally, the new estimates for other social expenses are systematically higher across all countries, as shown in Figure A.3 in the Appendix. The difference is significant in some cases, such as Ecuador, while in others, like the Dominican Republic, it is much smaller. Compared to health and education, the discrepancy in other social expenses is primarily due to differences in the definition of "other social expenses" and the use of aggregate data in national accounts, which explain the variations between the new and old estimates.

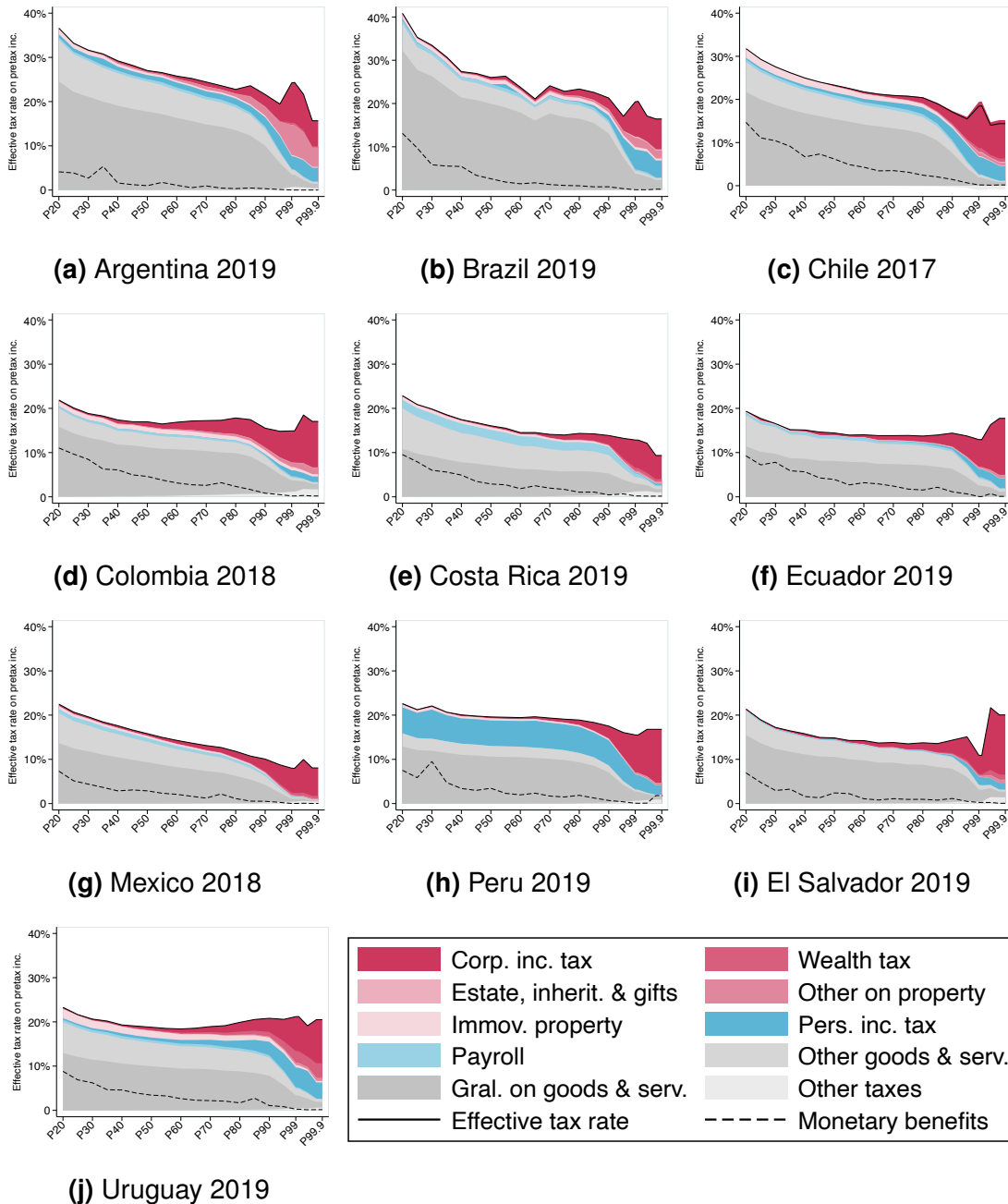**Figure 5:** Post-tax national income: new vs. old series.

**(a)** Health.

(b) Education.

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Appendix

A   Supplementary Tables and Figures

Figure A.1: Incidence of taxes and transfers

(a) Argentina 2019

(b) Brazil 2019

(c) Chile 2017

(d) Colombia 2018

(e) Costa Rica 2019

(f) Ecuador 2019

(g) Mexico 2018

(h) Peru 2019

(i) El Salvador 2019

(j) Uruguay 2019

Legend:
- Corp. inc. tax
- Estate, inherit. & gifts
- Immov. property
- Payroll
- Gral. on goods & serv.
- Effective tax rate
- Wealth tax
- Other on property
- Pers. inc. tax
- Other goods & serv.
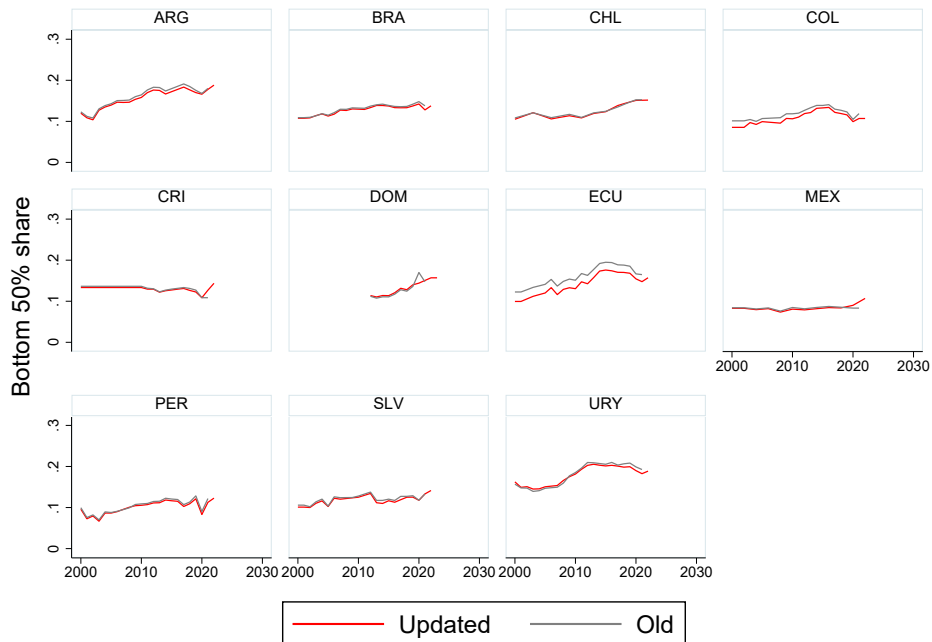- Other taxes
- Monetary benefits

Note. Authors' elaboration. The Pre-tax per capita household income.

Figure A.2: The evolution of in-kind social expenditures
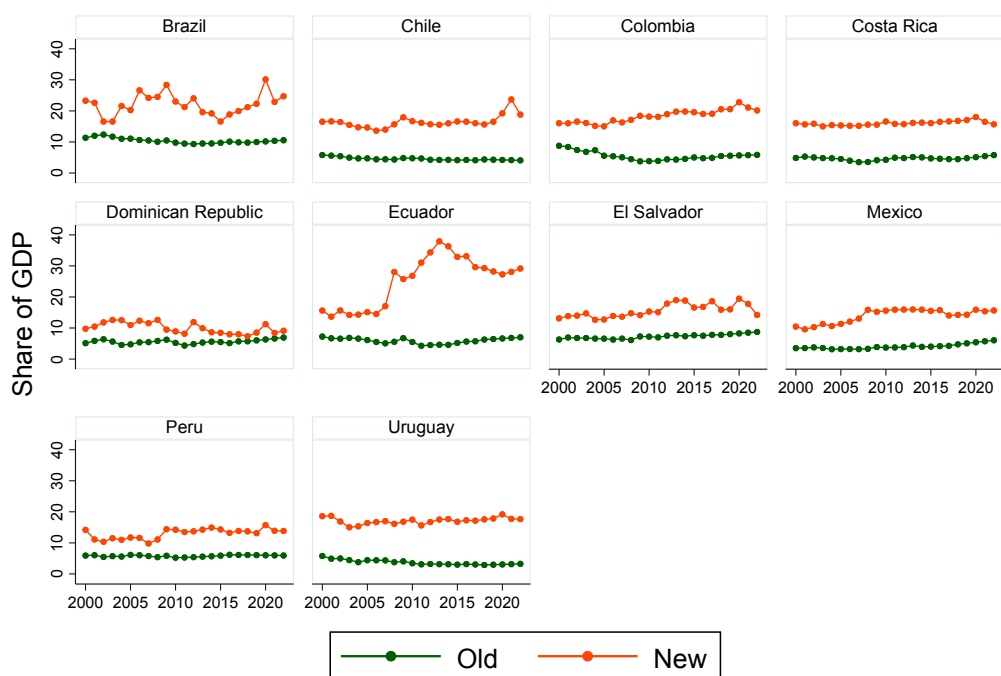

(a) Top 10% share.

(b) Bottom 50% share.

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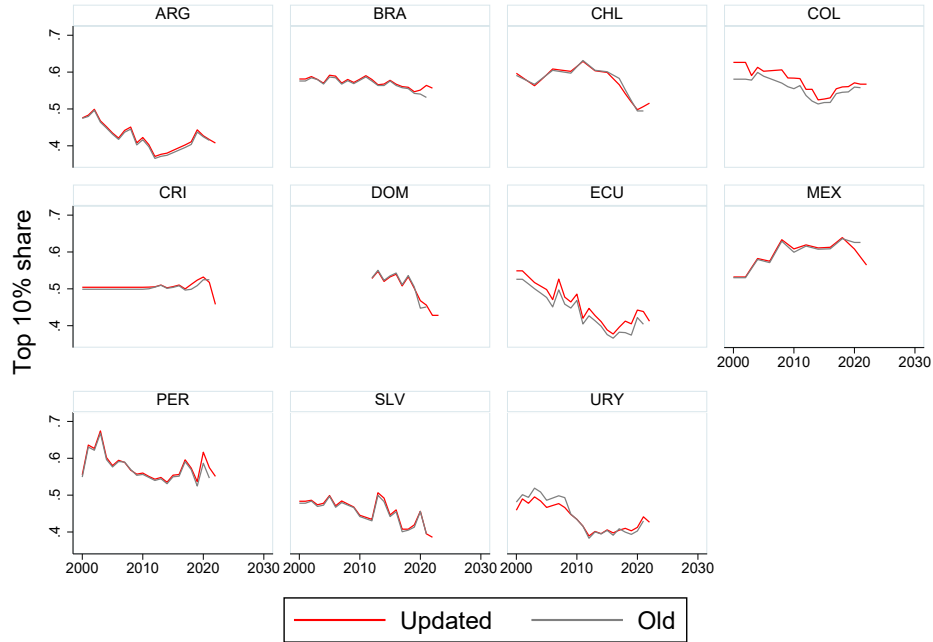
Figure A.3: The evolution of other in-kind social expenditures

Graphs by country

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